



Name_____Date_____

How can I undo an exponential function?

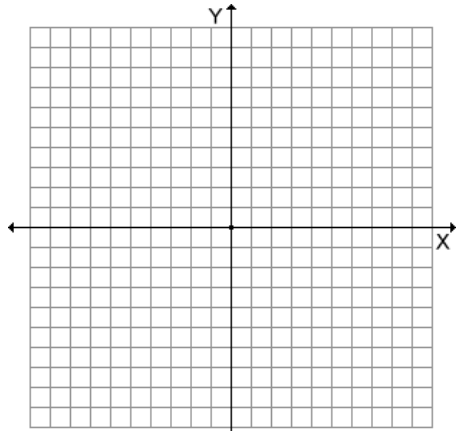
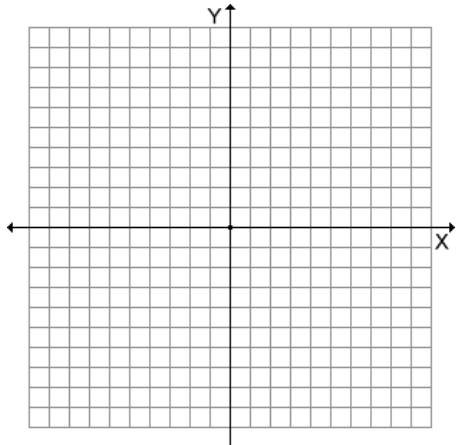
Finding the inverse of an exponential function

today's big goal You'll apply what you know about inverses to the parent functions from Essential Skill #4!

Have your FACILITATOR read the introduction & questions from your e-book.

6-54 Jigsaw

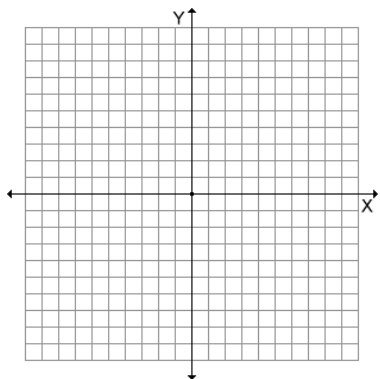
- Each person should pick one of the first four parent graphs to work on. Whoever finishes first should also complete $y = x$.
- When finished, all group members should present their work to their group.
- Then, as a group, work on the last two together.

i. $y = x^2$	ii. $y = x^3$
<p>a. Find the inverse. Be sure to write the equation of the inverse in y-form.</p>	<p>a. Find the inverse. Be sure to write the equation of the inverse in y-form.</p>
<p>b. Include a sketch of each parent graph and its inverse.</p> 	<p>b. Include a sketch of each parent graph and its inverse.</p> 

iii. $y = \sqrt{x}$

a. Find the inverse. Be sure to write the equation of the inverse in y-form.

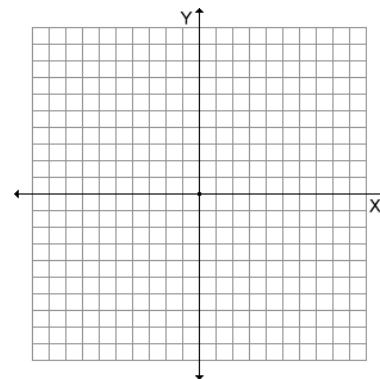
b. Include a sketch of each parent graph and its inverse.



iv. $y = \frac{1}{x}$

a. Find the inverse. Be sure to write the equation of the inverse in y-form.

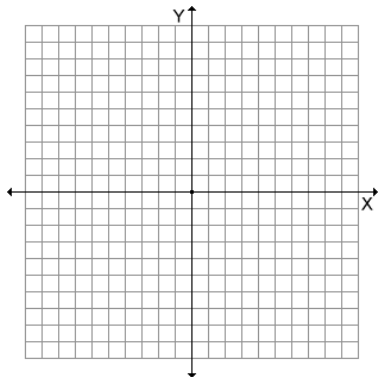
b. Include a sketch of each parent graph and its inverse.



v. $y = x$

a. Find the inverse. Be sure to write the equation of the inverse in y-form.

b. Include a sketch of each parent graph and its inverse.



Everyone should complete the ones below together (as a group):

vi. $y = b^x$ (pick a b value)

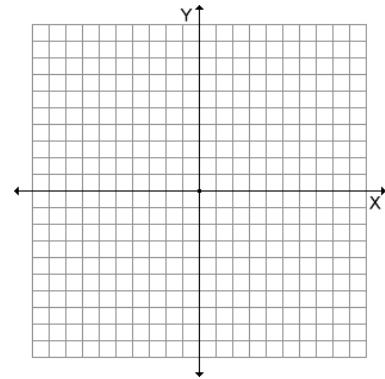
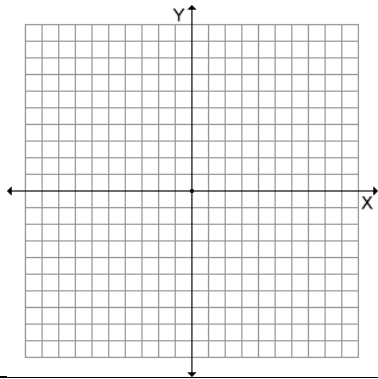
$y = |x|$

a. Find the inverse. Be sure to write the equation of the inverse in y-form.

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b. Include a sketch of each parent graph and its inverse.

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c. Are any parent functions their own inverses? Explain how you know.

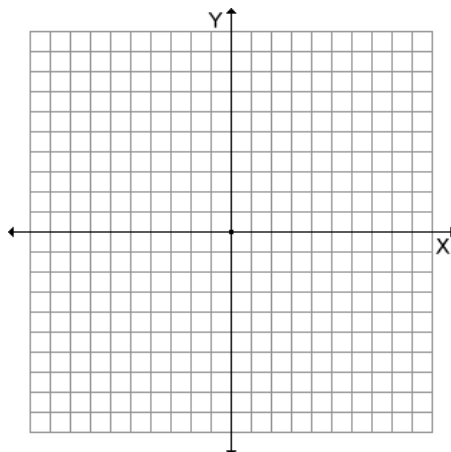
d. Do any parent functions have inverses that are not functions? If so, which ones?

6-55 Have your TASK MANAGER read the introduction to 6-55 in your e-book.

a. You know how to make an $x \rightarrow y$ table for the inverse of $y = 3^x$. Make the table below:

x	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9
y					

b. You also know what the graph of the inverse looks like. Sketch the graph:



c. You also have one way to write the problem based on your algebraic shortcut from 6-38d (from 6.1.3 classwork). Write an equation for the inverse, even though it may not be in y -form.

d. If the input for the inverse function is 81, what is the output?

If you could write an equation for this function in y -form or as a function $g(x)=$, and you put in any number for x , how would you describe the outcome?

6-56 An Ancient Puzzle Have your REPORTER read the history of the Ancient Puzzle from your e-book!

$$\log_2 8 = 3$$

$$\log_3 27 = 3$$

$$\log_5 25 = 2$$

$$\log_{10} 10,000 = 4$$

Use the clues to find the missing pieces of the puzzles below (rewrite the complete statement next to the question!):

a. $\log_2 8 = ?$

b. $\log_2 32 = ?$

c. $\log_7 100 = 2$

d. $\log_5 ? = 3$

e. $\log_7 81 = 4$

f. $\log_{100} 10 = ?$